Group 27

Unity-Based Fighter

"Dance of Warriors"

Introduction

- **Cameron Markwell**
  - Senior in Applied Computer Science Game and Simulation Programming at OSU
  - Initiated Project, created groundwork for environment, movement, weapon systems, shooting (all mostly overwritten by now), and created action states system. Adjusted multiple things including camera and dash. Added in melee attack, animation rigging for gun, weapon damage, and weapon switching.
- **Brayden Tremper**
  - Senior in Applied Computer Science with a focus in Game and Simulation Programming at OSU, graduating in June 2021
  - Setup input tracking for keyboard/gamepad, implemented third-person camera, created dynamic reticle in correspondence with player movement, initialized character ragdolls, set up health system with limb damage, created initial music analyzer, expanded/smoother general movement and animations, created graphics and set up main menu, staging scene, and arena scene.
- **Gauge Hartwell**
  - Pursuing a degree in Cybersecurity from the College of Engineering at OSU, graduating June 2021.
  - Added inventory UI, functionality for new inventory items to be added to game, backend code for picking items up from game world, backend code for using items from inventory, healing items, initial addition and implementation of enemy and basic enemy AI, limb debuff mechanics, pause menu and player death menu that include buttons for resetting the game environment or quitting the game, as well as resuming the game (in the case of the pause menu).
- **Aaron Koffel**
  - Pursuing a degree in Applied Computer Science with a focus in Simulation and Game Programming, graduating June 2021.
  - Added several gun mechanics (recoil, reload, fire rate, aim assist, backend code), added an aiming reticle (overwritten with our new dynamic reticle), made improvements to the movement system (added dash/dodge, smoothed out jump/landing, added a falling animation, improved walking animations), and added sound effects for attacks and character interactions.

Project Partner

- **Benjamin Brewster**
  - EECS professor at Oregon State University now serving as the Online Program Director for EECS.
  - To have an enjoyable fighting game that targets complicated ideas such as limb damage.

Overview

This report provides information regarding the functionality for our project. Our project consists of developing a full scale video game using Unity3D in an attempt to explore the relationship between an enemy AI and a human player. With this, the presentation seeks to outline the current functionality of the game and what the future goals look like.

Vision & Goals

- Make a 3D fighting game that takes inspiration from the fighting mechanics of other games like Dark Souls and The Witcher 3, where interactions between the player and the enemy can resemble a "dance."

- The game will have enemies' movements and actions synchronized to background music in order to make the player feel that they are "dancing" with their opponent when fighting.

- "Finished" product for this project will include one boss that has their actions synchronized to music, a player character who can interact with that boss (using the music as an indication of the rhythm of the fight), and a set of moves and weapons accessible to the player which may also be done in-time.

Constraints

- Graphics
  - The game has to be in 3D
- Player mobility
  - The player must move smoothly in order to maintain the immersion regarding the dance.
  - This includes horizontal movement, jumping, dodging, attacking, and item use
- Enemy AI
- Time (must be "finished" by end of Winter Term)
- Limb Damage (Requested by Project Partner)
- Music Synchronization
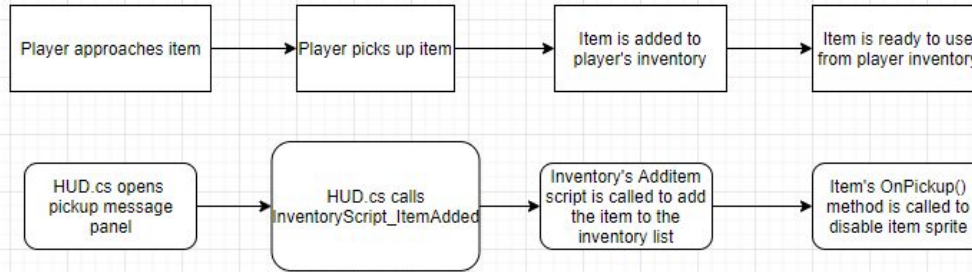- Ability for users to download and play the game
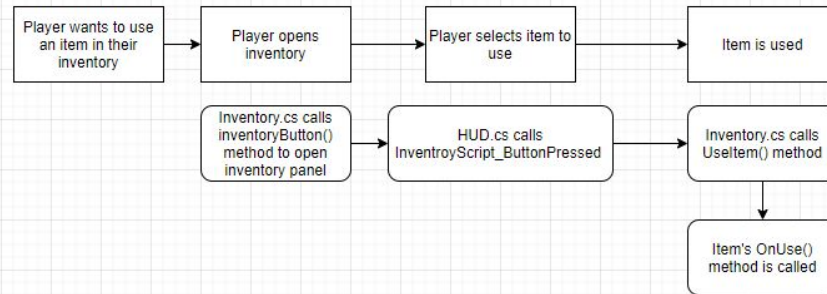
System Walkthrough

Overall Walkthrough
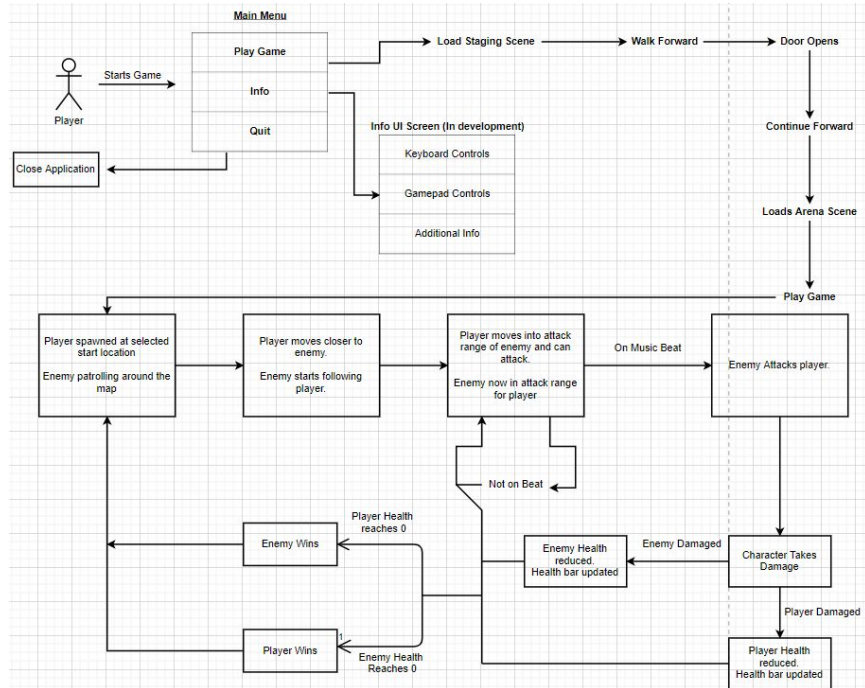
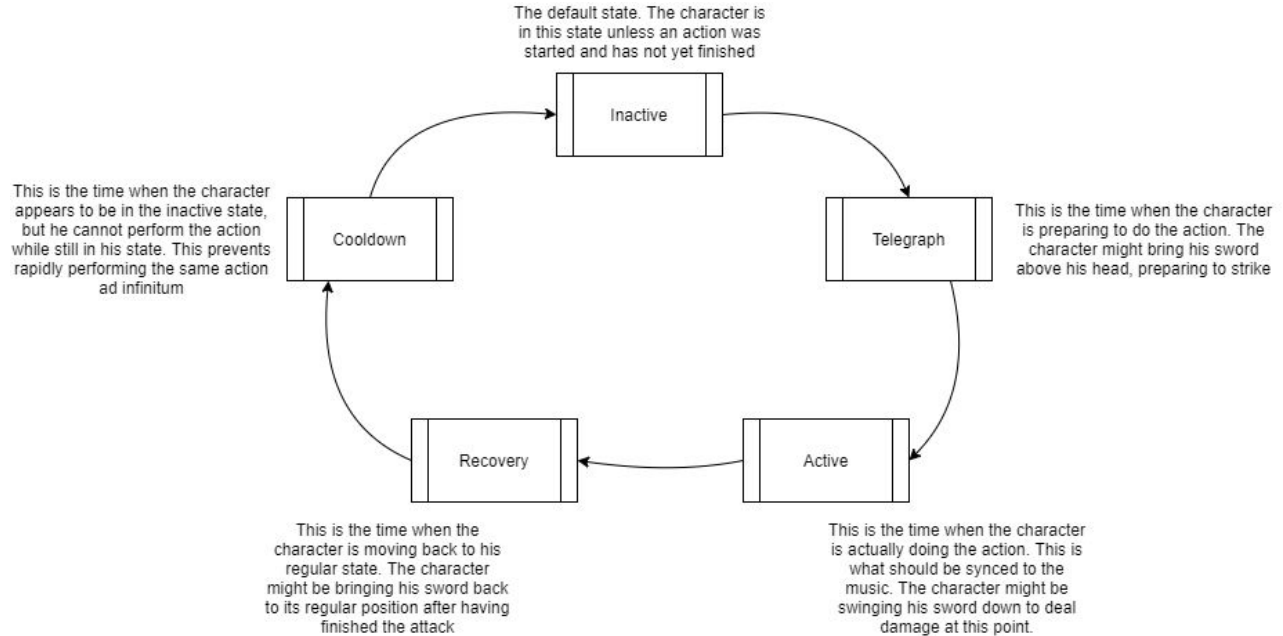# System Walkthrough (Cont'd)

Adding Item to inventory

Using Inventory Item

System Walkthrough (cont'd x2)

Here is a description of the action states used for special movements (dashing), weapons, and tools

The default state. The character is in this state unless an action was started and has not yet finished

Inactive

This is the time when the character appears to be in the inactive state, but he cannot perform the action while still in his state. This prevents rapidly performing the same action ad infinitum

Cooldown

Telegraph

This is the time when the character is preparing to do the action. The character might bring his sword above his head, preparing to strike

Recovery

Active

This is the time when the character is moving back to his regular state. The character might be bringing his sword back to its regular position after having finished the attack

This is the time when the character is actually doing the action. This is what should be synced to the music. The character might be swinging his sword down to deal damage at this point.

System Walkthrough (cont'd x3)

How a stick is used

Using any melee weapon is equivalent to what is shown below.

Using a gun is similar. There are some differences such as shooting not having an animation, and swinging a gun requires enabling and disabling animation rigging, but what is shown is the important part of the weapons system

The enemy decides to attack differently from the player character (there's no one to hit a button to say attack), but after deciding to attack everything is identical.
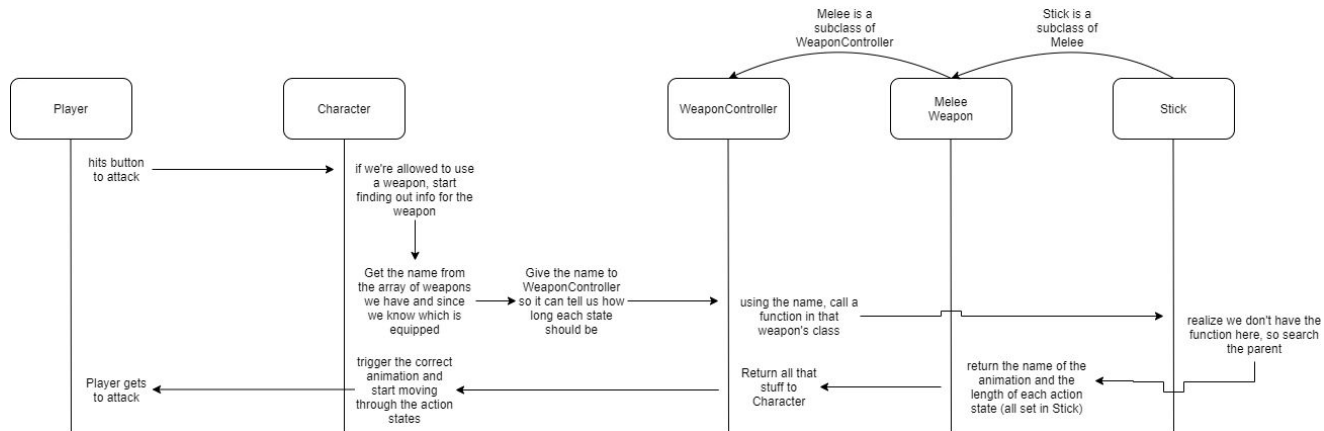
Challenges

- Animations and timing
  - Learning how to make character animations work correctly has been difficult. Making a character face and move in the correct direction with an animation has been more difficult than anticipated
  - Making dash/dodge animations work with player movement has been difficult to implement.
  - Smoothing out the jump and landing animations was tough

Successes

- Added characters to the game and have them interacting with each other
- Added sounds for character interactions with each other and the game world
- Enemy character moves around environment on their own path and follows/attacks player when close enough to them
- Implemented an inventory and menu system
- Added a custom arena environment to the game
- Added weapons (sword and sidearm)
- Some movement options (dash, jump, sprint, regular directional movement)
- Able to switch between game environments by way of a "door"
- Implemented music beat tracker and applied to map environment.

Future Goals

Goals:

- Add player preferences for adjusting look sensitivity and volume
- Improve character animations
- Improve music analyzer
- Create varying attack animations
- Beta testing
- Fix Bugs encountered from Beta Testing

Stretch Goals:

- Further expand the movement options for the player
- Add more bosses and enemies
- Add extra soundtracks for each boss
- Add more items/weapons for the characters to use
- Add more environments for the characters to play/fight in

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